MULTIMEDIA UNIVERSITY ™

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2019/20

ETN4116 – ADVANCED NETWORKING TECHNIQUES

(TE)

11 MARCH 2020
09:00 a.m. – 11:00 a.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 5 pages (including this cover page) with 4 Questions only.
2. Answer **ALL** questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please print all your answers in the Answer Booklet provided.

Question 1

(a) Differentiate between Post Office Protocol (POP3) and Internet Message Access Protocol (IMAP) for electronics mail message retrieval.

[6 Marks]

(b) CyberDUCK used for File Transfer Protocol (FTP) client to transfer files quickly.

(i) Identify either FTP is a reliable or unreliable data transfer. Explain your answer.

[3 Marks]

(ii) Why is FTP using out-of-band control data transfer?

[3 Marks]

(c) There are a lot of video streaming being exchange between enterprise user applications (Youtube) and end user devices connected to Telco network. This results in high network congestion. As the Telco Network Manager, you need to write a report to buy a new proxy server to solve the said problem. Explain the following items:

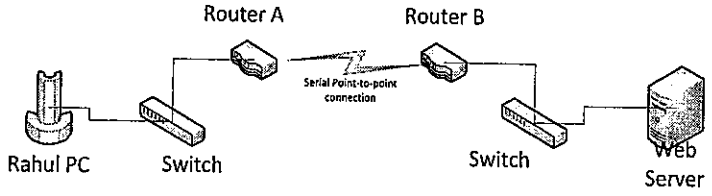
(i) What is a proxy server?

[3 Marks]

(ii) How proxy server can ease the network congestion of the Telco link.

[3 Marks]

(iii) Now, assume below is the end-to-end network diagram (private VPN) for your Telco customer (Rahul Enterprise), its PC accessing the intranet web server:



Rahul PC is configured with IP address 10.1.1.1, mask 255.255.255.0.
Router A's Ethernet interface is configured with 10.1.1.100, mask 255.255.255.224
Router A's serial interface uses 10.1.1.129, mask 255.255.255.252
Router B's serial interface uses 10.1.1.130, mask 255.255.255.252
Router B's Ethernet interface is configured with 10.1.1.200, mask 255.255.255.224
The web server uses 10.1.1.201, mask 255.255.255.224.

Is anything wrong with this network? Explain and justify your answer. What is the easiest thing you could do to fix it? (assume any interior routing protocol)

[4 Marks]

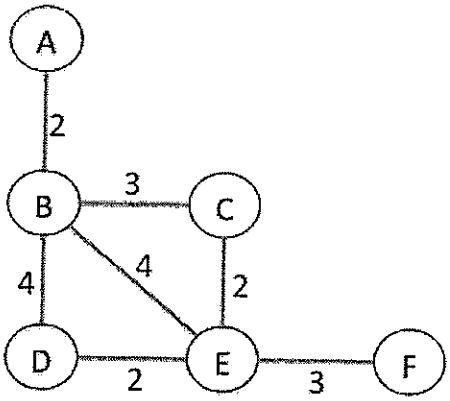
(iv) Given a new IP address of 10.5.118.3 and the mask 255.255.0.0 in the system, what is the subnet number. Justify your answer (use the binary of 10.5.118.3 is 0000 1010 0000 0101 0111 0110 0000 0011)?

[3 Marks]

Continued.....

Question 2

(a) Most routing protocols are based on either link-state or distance-vector approach. Given the network link in **Figure Q2a** where the link cost for each node is given in the diagram, answer the following question.



Node A routing table

Destination	Next Node	Cost
B		
C		
D		
E		
F		

Figure Q2a

(i) By using distance-vector routing, what is the final routing table for **node A** and **node E** (use the routing table format given in **Figure Q2a**)?

[8 Marks]

(ii) If the link between B to E is now broken, identify and update the routing table for node A and node E.

[4 Marks]

(iii) Why is the routing table not the same for all nodes using distance-vector routing?

[3 Marks]

(b) By using Dijkstra routing algorithm, complete the routing table for **node a** below:

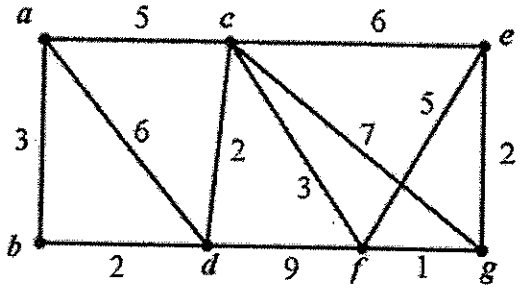


Figure Q2b

[4 Marks]

(c) IPv6 by default is the network addressing use nowadays. List **four** (4) improvement features of IPv6 as compared to IPv4.

[6 Marks]

Continued.....

Question 3

(a) **Figure Q3a** shows the packets vs time for a streaming media and its received packets.

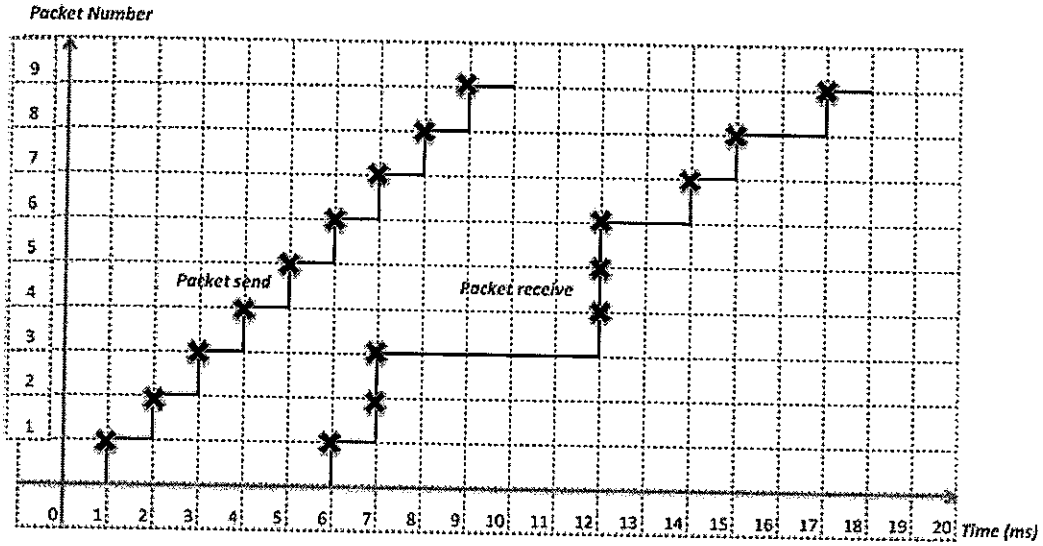


Figure Q3a

(i) Find the minimum and maximum delay between sender and receiver.

[3 Marks]

(ii) Redraw **Figure Q3a** in your answer sheet. Then, draw the fixed play out if the play out delay is 6ms. Identify which packet(s) will be dropped from the play out.

[10 Marks]

(iii) What is your recommendation to improve the problem in 3(a)(ii)?

[4 Marks]

(b) Name and explain the simplest way to recover from packet loss in streaming media.

[4 Marks]

(c) Discuss the function of Session Initiation Protocol (SIP) in Voice over IP (VoIP) call.

[4 Marks]

Continued.....

Question 4

(a) Man-in-the-middle attacks are typical attacks on online banking systems. The fraudster is nestling himself in the communication flow between the customer and the bank with the aim of manipulating the transaction data to his own advantage leaving the bank and the customer unaware. Discuss your solution to protect from this attack from the customer point of view and bank officer view.

[5 Marks]

(b) What is packet sniffing? What harm can packet sniffing does to users?

[6 Marks]

(c) Describe both, public-key and symmetric-key encryption. How does public-key encryption better than symmetric-key encryption?

[6 Marks]

(d) With the aid of diagrams, discuss the differences between filter-based firewall and proxy-based firewall.

[8 Marks]

End of Paper